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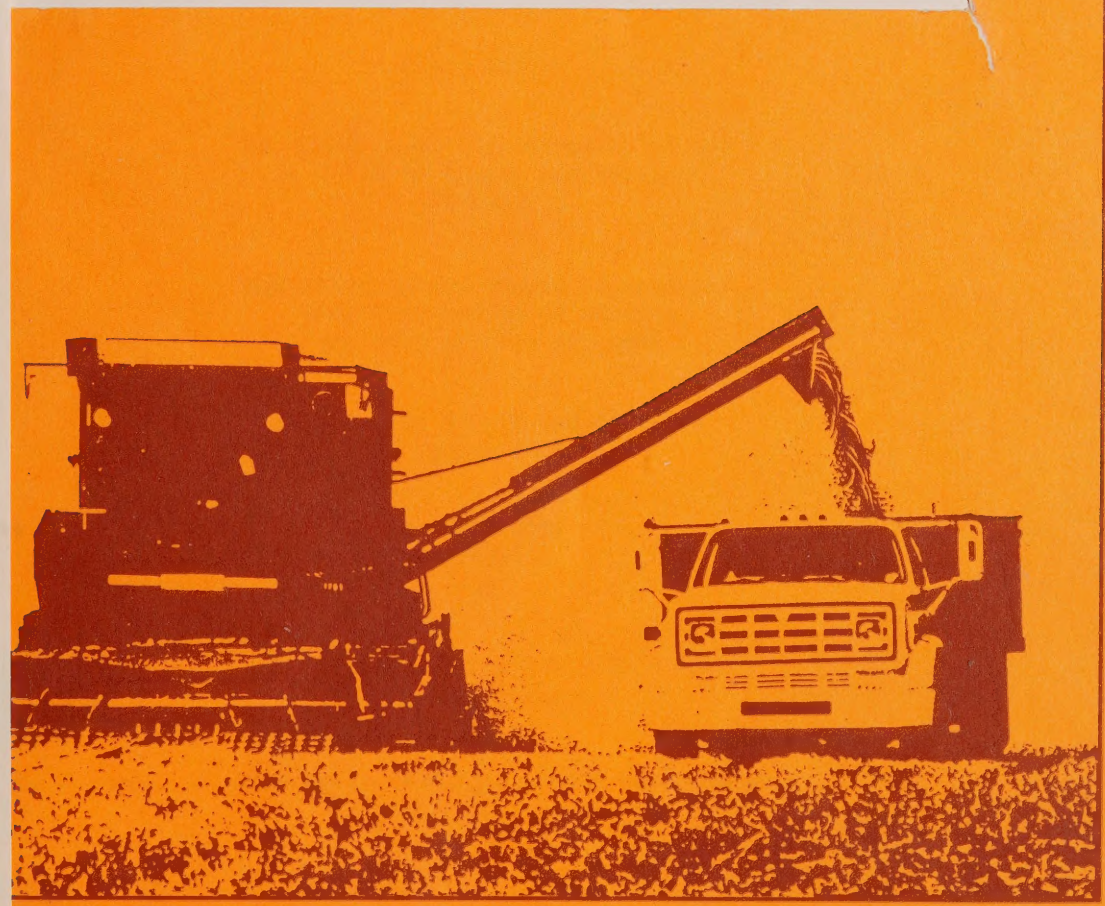
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**Agriculture Statistics Division
Crops Section**

**Division de la statistique agricole
Section des cultures**

An Overview of the Canadian Oilseed Industry

Working Paper No. 4
2nd Edition
revised



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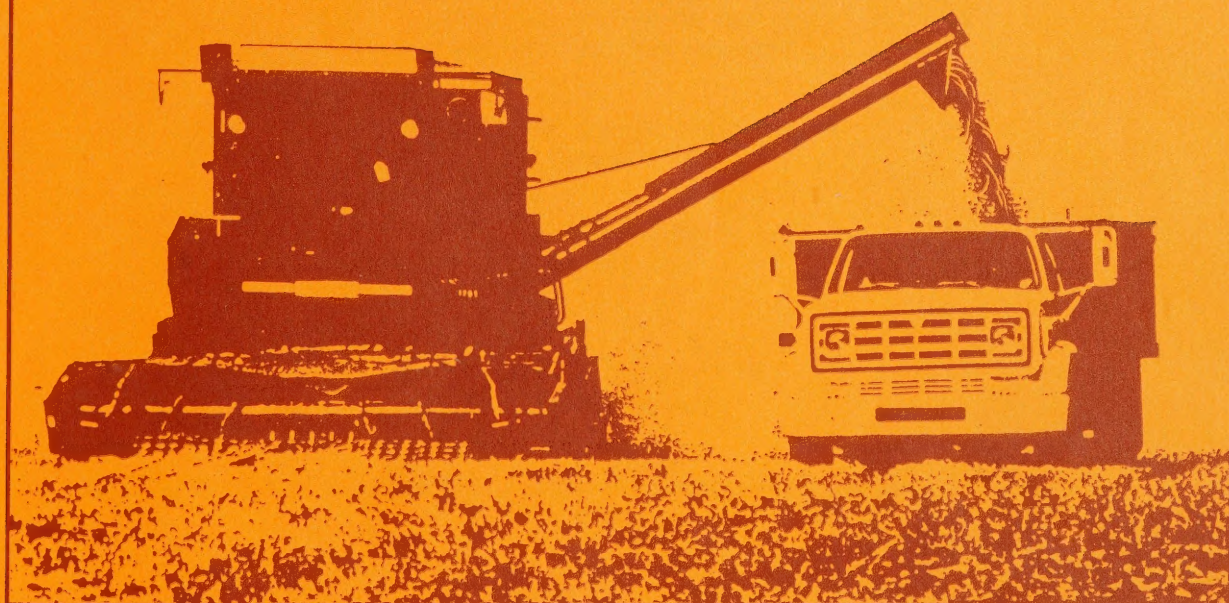
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Statistics Canada
Agriculture Statistics Division
Crops Section
Grain Marketing Unit

An Overview of the Canadian Oilseed Industry

Working Paper No. 4
2nd Edition
revised

Glenn Lennox

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PREFACE

The Grain Marketing Unit of Statistics Canada is the centralized source for grain marketing information in Canada. The unit publishes a variety of supply-disposition data for the major grains in Canada, monthly in the Cereals and Oilseeds Review (STC 22-007) and annually in the Grain Trade of Canada (STC 22-201). This paper, an overview of the supply-disposition factors for the Canadian oilseed industry, is intended to assist in making more effective use of the two statistical publications noted above.

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AN OVERVIEW OF THE CANADIAN OILSEED INDUSTRY

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Introduction

Oilseed production in Canada is a major contributor to both the agricultural and national economies. Oilseeds contributed 12.5% to the total value of crops sold in 1983. Canola/rapeseed alone contributed 8%, making it the third largest crop in Canada following wheat and barley. Not only are oilseed crops of significant value to the farming community, they generate valuable foreign exchange for the national economy. The value of oilseed and oilseed product exports in 1983 exceeded \$750 million. In the cases of canola/rapeseed and flaxseed, Canada is the major world exporter. Domestic production of oilseeds also significantly reduces Canadian dependence on imported vegetable oils and protein meals. Additional economic benefits are realized from the economic activity generated by the domestic processing of oilseeds.

This paper provides an overview of the supply and disposition factors of the Canadian oilseed industry, and covers oilseed production, markets, domestic processing and domestic consumption. It is intended as a complement to the supply and disposition data compiled by the Grain Marketing Unit.

1. Oilseed Production in Canada

There are about 40 different species of plants in the world used for commercial production of oils, of which only a quarter are important in world trade. Of these, only four(1) are of commercial importance in Canada; canola/rapeseed(2), soybeans, flaxseed and sunflowers.

Canola/rapeseed is a member of the Brassica family of plants, which also includes the mustards and vegetables such as cabbage, turnips and radishes. (B. napus varieties of rapeseed are of the same species as rutabagas, and B. campestris varieties of the same species as turnips). Canola/rapeseed is generally spring sown in Canada, but fall varieties are grown in other parts of the world. It produces best under relatively cool and moist climatic conditions.

The soybean is a temperate climate legume. With their high levels of excellent quality protein, the beans are valuable in both human and livestock diets, in addition to the value of their oil content. Soybeans are grown as a spring sown crop. Climate and soil requirements for soybeans are similar to those for corn.

Flax is grown both for its fiber and for its oil bearing seeds, although different plants are bred for each purpose. Canadian production is of the oilseed bearing varieties. A spring sown crop, its range of production is similar to that for cereal grains.

The sunflower is a native North American plant, although it was first established as a commercial edible oil source in the U.S.S.R. It is a tall plant which requires a relatively long growing season. However it is fairly drought tolerant, which increases its range on the Prairies beyond that suitable for grain corn. Varieties with large striped seeds are grown for confectionery purposes; those grown for oil production have a smaller black seed.

Virtually all canola, flaxseed and sunflowerseed are grown in Western Canada. Soybeans, with minor exceptions, are grown only in Ontario. Although Ontario farmers are presently experimenting with canola, and flaxseed has in the past been grown in that province, these East-West concentrations of production are unlikely to change in the near future.

Alberta and Saskatchewan are the major canola producers, with each contributing 41% to 1983 production. Manitoba is the major producer of flaxseed, with 64% of 1983 production, followed by Saskatchewan with 30%. Eighty-nine percent of Canadian sunflowerseed is produced in Manitoba, with most of the remainder grown in Saskatchewan.

- (1) Small areas of other oilseeds have been grown in Canada from time to time, such as crambe (a high erucic acid industrial oil) and safflower. None of these are significant at the present time and thus are excluded from this report. Oil is also extracted from the germ of the corn kernel. Corn is a common crop in Canada, but it is not generally considered an oilseed.
- (2) The term "canola" was adopted in 1980 and refers to "double-low" varieties of rapeseed, with less than 5% erucic acid in the oil and less than 30 micromoles of glucosinolates per gram of meal.

In 1983 canola was the most important of the four crops, with a total production of 2.68 million tonnes on 2.33 million hectares (5.75 million acres). This is a major increase since 1963, when only 190 thousand tonnes were produced, but 23% lower than the record production of 3.5 million tonnes in 1978 (see chart 1). Canola generally is not grown in a rotation greater than one year out of four, because of danger of disease and insect infestation. Therefore Canada's long-term sustainable area would be in the range of 3.9-4.0 million ha. Given historical yields, this represents a production of 4.6 to 4.8 million tonnes. Unless cereal markets deteriorate badly, however, this level of production is unlikely.

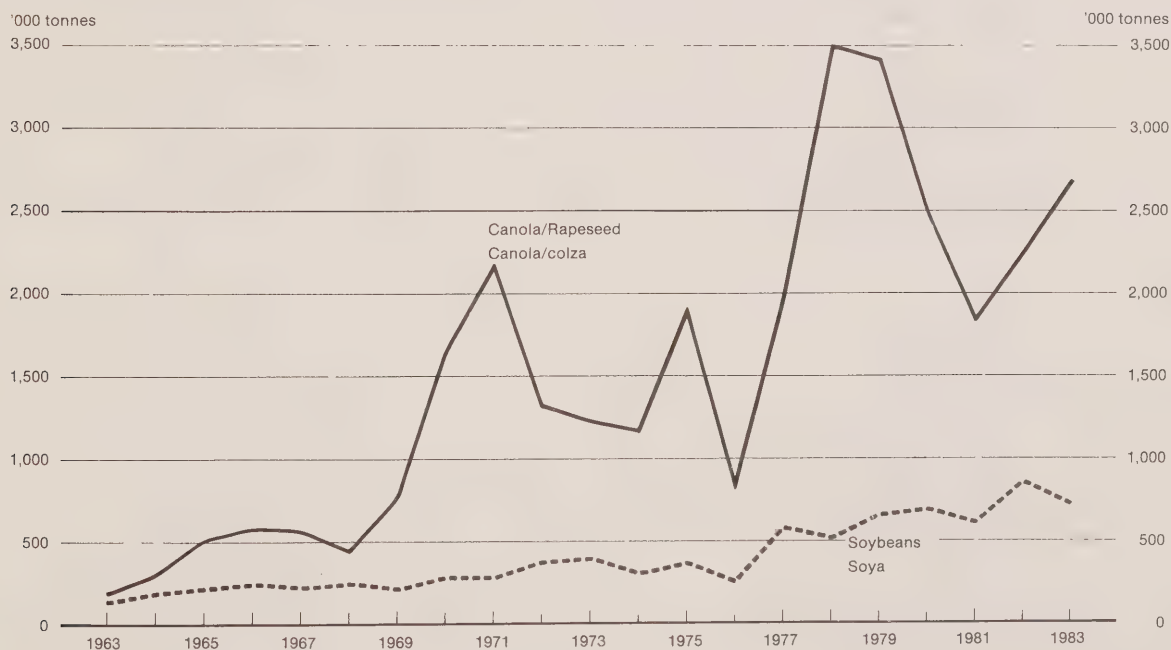
Soybean production was 721 000 tonnes in 1983, on 364 000 ha. (900,000 ac.). This is an 82% increase over the 397 000 tonnes produced ten years earlier (chart 1), but 16% below the record 857 000 tonnes produced in 1982. With the availability of new varieties, production is expanding into Eastern Ontario, as well as into Manitoba and Quebec, so that a slow increase in the production of soybeans in Canada is expected. The effect of this increased production of both soybeans and canola has been to significantly reduce Canada's dependence on imported edible oils and oilseeds (see section 5).

Chart — 1

Total Production of Canola/Rapeseed and Soybeans, 1963-83

Production totale de canola/colza et de soya, 1963-83

Graphique — 1



In terms of production, flaxseed falls in third place, with 465 000 tonnes produced on 449 300 ha. (1.1 million ac.) in 1983. This is similar to the 1973 production of 493 000 tonnes, and well below the 1979 record production of 815 000 tonnes. Significant changes in flaxseed production in Canada are not anticipated.

Sunflowerseed production is significantly less than that of the other three oilseeds, being only 50.8 thousand tonnes in 1983. Sunflower production in Canada is extremely variable; in 1979 a record 218 000 tonnes were produced.

2. Characteristics and Uses of Oilseeds

The oilseeds produced in Canada belong to two groups, based on the fatty acid composition of their oils. Canola, soybean and sunflower oils are classified as edible or soft oils, while linseed oil is classified as an industrial or technical oil.

In addition to oil, the solid portion of the seed, or meal, is a valuable product of the oilseed crushing process. It is high in protein and other essential nutrients and thus is used as a supplement in livestock feeds.

a. Canola/Rapeseed

Canola/rapeseed is now the most important oilseed in Canada. Its rise to pre-eminence domestically is in large part due to the development of the "canola" or "double-low" varieties of rapeseed. Conventional rapeseed oil contains 23% erucic acid, while the meal contains high levels of glucosinolates.

High levels of erucic acid (a fatty acid found in most Brassica plants, including mustard and crambe, but rarely in other species of oilseeds) were found to be associated with heart problems in rats, although high erucic oils have excellent lubricating and other industrial qualities. Low erucic acid rapeseed oil (canola oil) not only has low levels of erucic acid, but also has much higher levels of essential fatty acids such as oleic and linoleic acids.

Glucosinolates, the compounds responsible for the flavours of mustard and Brassica vegetables such as turnips and radishes, were found to be associated with the occurrence of goiter in animals. Thus it was necessary to restrict the level of rapeseed meal in livestock rations.

Intensive research was carried out into the development of low erucic acid and low glucosinolate varieties of rapeseed. In the late 1960's low erucic acid varieties became available to farmers. In the mid-seventies varieties which also had low levels of glucosinolates became available, and in 1980 the name "canola" was adopted to identify these "double-low" varieties of rapeseed. Canola is defined as an oilseed of the species *Brassica Napus* or *B. Campestris*, the oil content of which contains less than 5% erucic acid and the solid component of the seed contains less than 30 micromoles of

glucosinolates. It should be noted that "canola" is a trademark and not a grade, since it cannot be visually distinguished from conventional rapeseed.

Canola oil is a good quality edible oil for margarines, shortenings, and salad and cooking oils. It has excellent cold storage stability (it resists clouding) and frying properties. It has a high smoke point, and is preferred in Japanese and Chinese cooking for this reason. It is suitable for margarine manufacture when blended with other vegetable oils (used alone it has a tendency to grain after packaging).

High erucic acid rapeseed oils have industrial applications, in plastics, lubricants, lacquers and detergents. A special high erucic acid (over 50%) low glucosinolate variety (R-500) has been developed to meet this demand. It is grown only under contract.

Canola meal, with a protein content of 36-37%, is a good protein supplement in livestock rations. It has excellent calcium and phosphorus levels, as well as the amino acid methionine, all of which are somewhat limited in soybean meal.

b. Soybeans

Soybeans produce a good quality edible oil, for margarine, shortening and salad and cooking oils. As with canola oil, it is generally blended with other oils for margarine manufacture. It has a 50% level of the major polyunsaturated fatty acid "linoleic", compared to 24% for canola oil and 57% for corn oil. Since the oil content of the seed is only 17% the production of soybean meal is relatively more important, and the spread of soybean oil use world wide has been in part due to the demand for protein meals.

Soybean meal, generally used as the comparative basis for all other plant protein supplements, contains about 44% protein. It is an excellent protein supplement for all types of livestock. It is also used for human consumption in infant formulas, as meat extenders, for protein supplementation and, to a limited extent, for producing textured meat substitutes.

c. Sunflower

Sunflower oil has one of the highest levels of poly-unsaturated fats (the oil contains 68% linoleic acid) and from a nutritional point of view it is regarded as a superior edible oil. Sunflowerseed meal is an excellent protein supplement. It is low in lysine, but when blended in a ration with soymeal it supplies the phosphorus, calcium, methionine and vitamin B12 that are lacking in the soymeal.

d. Flaxseed (Linseed)

Linseed oil is an industrial oil with excellent drying properties, and is particularly useful in paint manufacturing. Linseed meal is a good protein supplement for ruminants, and has a natural laxative effect.

It is deficient in lysine and methionine, and combination with other protein meals is usually recommended.

e. Corn

Corn germ oil, like sunflower oil, is advertised as being high in poly-unsaturated fats and is viewed as being superior for this reason. In actual fact, it is only slightly superior to soybean oil in this regard.

3. Oilseed Marketing

a. Domestic and Export Markets for Unprocessed Seed

The majority of the soybeans produced in Canada are crushed domestically although some are exported, mainly to several Asian countries. Exports were equivalent to 13.7% of production in 1982/83. The exported beans are generally destined for human food rather than for oilseed crushing purposes. In order to meet domestic oil and meal requirements Canada is a net importer of soybeans (chart 2). In 1982/83 419 400 tonnes of soybeans were imported from the United States, and as a result the domestic crush was 22% greater than total 1982 domestic production (chart 4).

Chart — 2

Graphique — 2

Exports of Canola/Rapeseed and Net Imports of Soybeans
Exportations de canola/colza et importations nettes de soya



Chart — 3

Graphique — 3

Total Domestic Crush of Canola/Rapeseed and Soybeans

Total des stocks de canola/colza et de soya triturés au pays

(Total volume crushed — Volume total trituré)

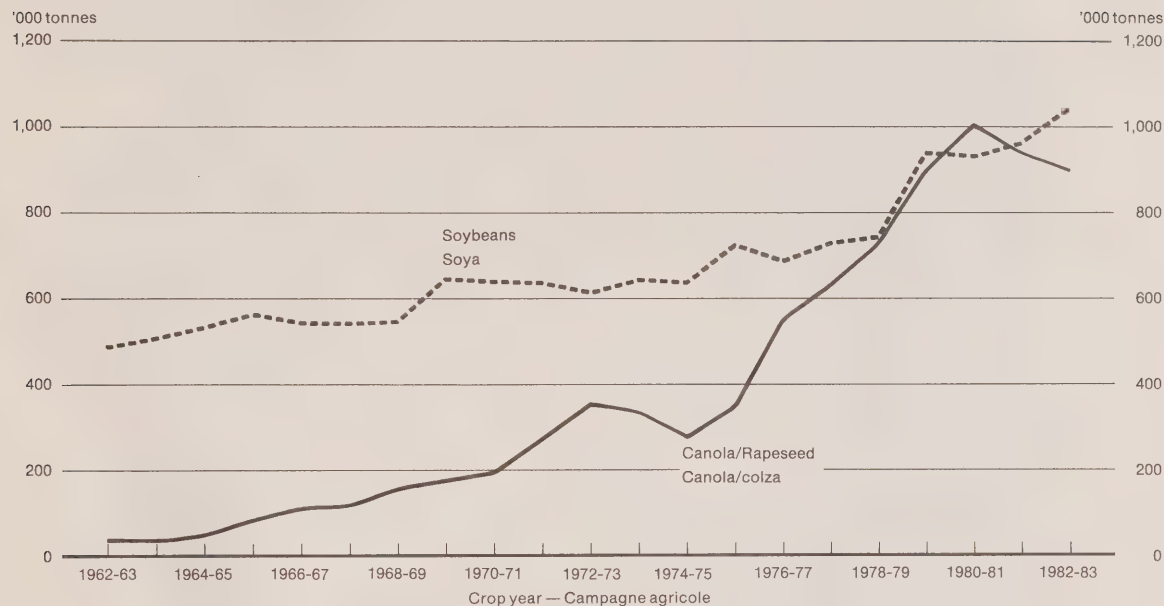


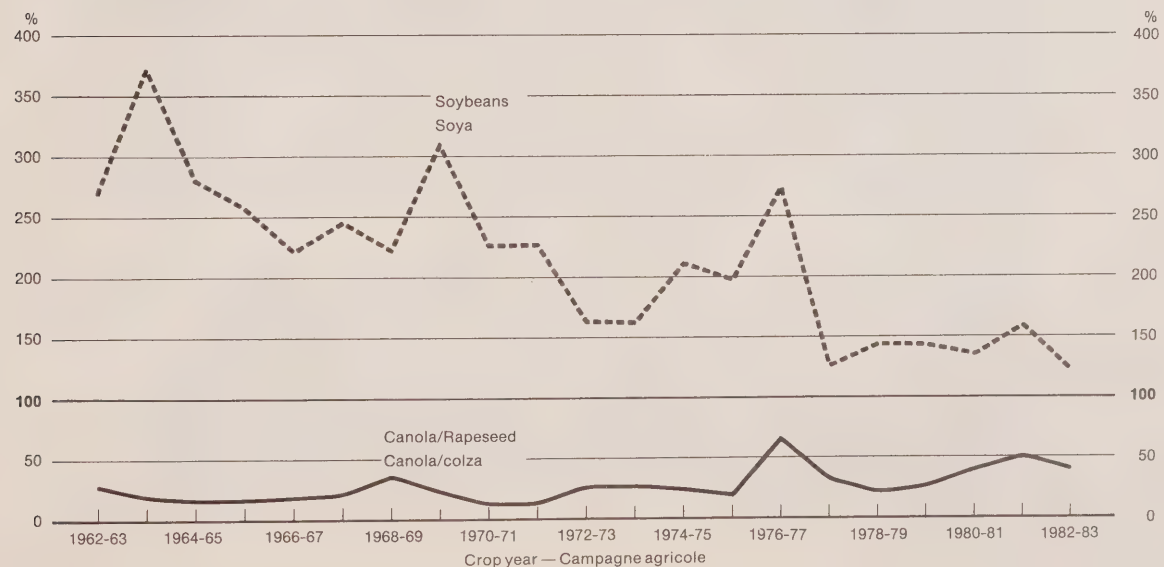
Chart — 4

Graphique — 4

Domestic Crush as a Percent of Total Production — Canola/Rapeseed and Soybeans

Stocks triturés au pays en pourcentage de la production totale — canola/colza et soya

(Percent of domestic production — Pourcentage de la production intérieure)



A greater proportion of canola is exported than is crushed domestically, although the trend has been toward a greater volume of domestic crushing (charts 3 & 4). In 1982/83 the amount of canola crushed domestically was equivalent to 40% of production, significantly greater than the 17% recorded ten years earlier. The actual volume crushed increased from 353.2 thousand tonnes to a record 1 003.3 thousand tonnes in 1980/81, as crushing capacity expanded in response to increased canola production.

Canada accounted for only 18% of world canola/rapeseed production in 1982/83. In world trade, however, Canada stands alone, contributing 53% to total world exports. Japan is the major purchaser of Canadian canola; in 1982/83 89% of all canola exported went to Japan. In comparison, the 1972/73 proportion was 57%. Other major canola importers, in many cases, now import canola oil and meal rather than the unprocessed oilseed. For example, India was a major importer of Canadian rapeseed in 1971/72, but in 1982/83 had become our largest export market for canola oil and imported little unprocessed canola. Japan, however, continues to import the raw seed and crush it domestically.

On average, half of the sunflowerseed produced in Canada is crushed domestically and half is exported. Much that is exported, however, is of the birdseed or confectionery variety. In 1982/83 40 000 tonnes or 43% of production were exported. A small amount of sunflowerseed is imported from the United States, but this has been declining in recent years, and amounted to only 1 600 tonnes in 1982.

Exports of flaxseed are quite significant, accounting for 59% of total production in 1982/83. Although Canada produced only 18% of the world's flaxseed, it supplied 88% of world trade in this product in 1982/83.

The flow of domestic and export shipments of Western oilseeds through the licenced elevator system is controlled by the Canadian Wheat Board quota system, although the Board is not involved in the actual marketing arrangements, either to domestic or to foreign buyers. A significant portion of flaxseed exported bypasses the licenced elevator system and is shipped directly to crushers in the U.S.A. Virtually all canola exports pass through the licenced elevator system, although a substantial proportion of domestic sales are made directly on a contract basis between the producers and crushers, as is also the case with sunflowerseed.

The majority of the canola processed in Canada is crushed in Western Canada in co-operative producer-owned plants. Seven separate crushing plants are located across the West, two in Manitoba, one in Saskatchewan and four in Alberta.

Soybeans are processed by three crushing plants located in Ontario. They not only process Ontario grown soybeans, but import a large proportion of their supply from the United States (40% in 1982/83). Domestically produced soybeans are sold under the jurisdiction of the

Ontario Soybean Growers' Marketing Board. The crushers purchase soybeans from local dealers who operate country elevators and storage facilities, as well as a small amount directly from the growers.

b. Pricing Structures

The price canola crushers must pay for their non-contracted supplies of canola is determined by futures trading on the Winnipeg Commodity Exchange. Provided quotas to the licensed elevator system are not restricted, they must meet the price paid by the elevator companies, which would be the futures price for the delivery month less basis (handling, storage and carrying charges). The futures price is largely determined by world market conditions, on which the supply and demand factors for U.S. and Brazilian soybeans and Malaysian palm oil have a major impact. Futures prices for the soybean complex are established at the Chicago Board of Trade.

Both soybean and canola crushers may hedge their purchases of oilseed and sales of products on the futures markets. Soybean crushers can "lock in" a crushing margin by buying beans and simultaneously selling the equivalent amounts of oil and meal on the futures market. Canola crushers have less hedging protection, since the Winnipeg Commodity Exchange does not have a futures market for canola oil. Canola oil prices correspond close enough to soy oil prices to allow hedging on a soy oil basis. There is not a strong relationship, however, between soymeal and canola meal prices, since Canadian feed companies do not generally commit their requirements for meal far ahead. The different oil and meal extraction rates for canola compared to soybeans are also a factor. With the much higher proportion of oil in canola, the effect of an oil price change on canola crushers is much greater than on soybean crushers. The fact that the canola export market is largely dependent on Japanese demand can result in highly variable canola prices. As a result of these factors, canola crushers are less able to hedge successfully on the futures market than are soybean crushers, and as a result experience much more variable crush margins. (refer to chart 7, section 4).

4. The Oilseed Crushing Industry

a) The Crushing and Refining Process

Two methods are used for oil extraction; the pre-press solvent extraction method, and direct solvent extraction. The choice of method depends on the oilseed being processed, and except for the presence of the mechanical expeller in the pre-press solvent extraction method, the steps followed are basically the same. Seeds

with a higher oil content, such as canola, sunflowerseed and flaxseed are generally processed by the pre-press expeller, and low oil content seeds such as soybeans by the direct solvent method.

In pre-press solvent extraction, the seeds are first flaked and heated for easier oil extraction, and then passed through a screw press. This squeezes out a large proportion of the oil, which is routed to a settling tank. The remaining oil cake is reground and sent to the solvent extractor, in which a solvent dissolves the oil from the meal. The meal, after this step, contains less than 1% oil. The oil is separated from the solvent by distillation. The solvent is recycled and the crude oil sent on to be refined.

Refining removes natural impurities to improve colour, flavour and shelf life. The oil is first degummed, the gum byproducts being used for soap manufacture, as a feed supplement or further processed to extract lecithin. The degummed oil is then bleached, deodorized and, if necessary, winterized. This last step prevents clouding when the oil is cooled. At this stage the oil is marketable as a salad or cooking oil. To produce a margarine or shortening stock base, the oil is hydrogenated to alter its chemical composition and produce the hardened fat base.

Oil extraction and refining using the direct solvent method is essentially the same as described above, except that after the initial flaking and heating operation, the material is sent directly to the solvent extractor.

With sunflowerseed, dehulling is generally performed as a preliminary step. The removal of the woody hull improves the quality of the meal, and also eliminates the possibility of undesirable compounds in the hull escaping into the oil.

An oilseed crushing plant, with dehuller and screw press facilities, can with minor modification process any type of oilseed. Specialization in one or two types of oilseeds generally occurs because of supply factors.

b) Extraction Rates

Chart 5 shows the 1982/83 extraction rates for the four major oilseeds processed in Canada. The relatively low oil content of soybeans is readily apparent, as is the high oil content of canola. The high loss in processing of sunflowerseed is due to dehulling before the seed is processed. The hulls are generally a waste product, but they can be used for fuel and experimentation with other uses, such as the production of building material, has been carried out.

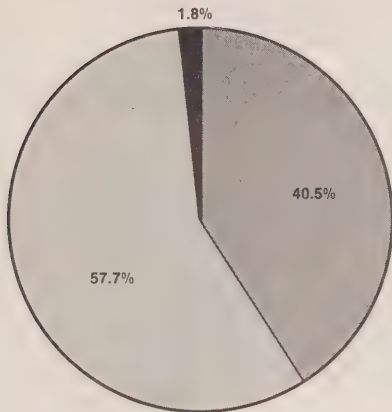
These extraction rates are generally fairly stable, but can fluctuate depending on growing conditions and varieties grown. For example, the hot weather in the summer of 1983 decreased the oil yield of the canola crop to about 1.5% below that shown on the chart. In the U.S.A. the same heat conditions caused an increase in the oil content of soybeans. With respect to variety, the shorter season B. Campestris varieties of canola yield about 2% less oil on average than

Chart — 5

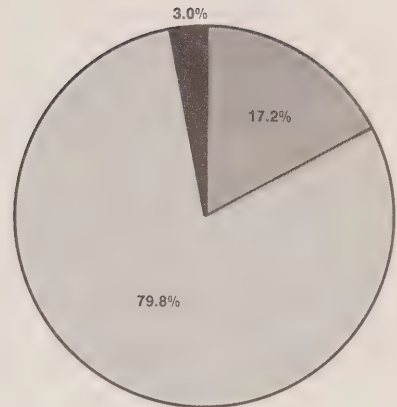
Extraction Rates of Oil and Meal, 1982-83

Taux d'extraction d'huile et de tourteaux, 1982-83

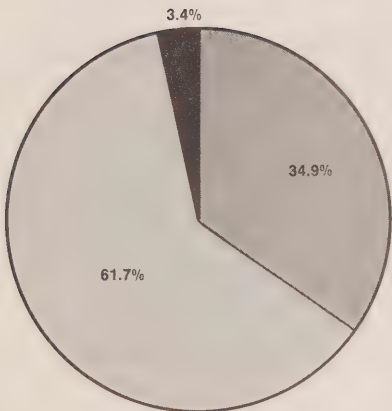
Graphique — 5



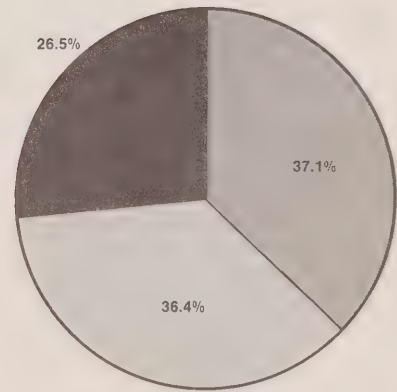
Canola/Rapeseed
Canola/colza



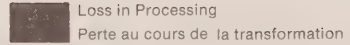
Soybeans
Soya



Flaxseed
Graine de lin



Sunflowerseed
Graine de tournesol



B. Napus varieties. Thus a shift to a greater proportion of B. Campestris varieties being grown would have a negative impact on the over all oil yield of the canola crush.

c) Canadian Crushing Facilities

Oilseed processing in Ontario began during World War II, when the Federal government transferred a small copra crushing plant from Vancouver to Hamilton. This plant initially crushed peanuts, sunflowerseed, flaxseed, palm kernels and copra. It started processing U.S. soybeans in 1948, and was the nucleus of Canadian Vegetable Oil Processing.

The first crushing plants on the Prairies were established in 1943. With the contracting of the first areas of rapeseed to supply wartime industrial oil needs, a small plant was built in Moose Jaw. It crushed both rapeseed and flaxseed, but was inefficient and ceased operations in 1951. A plant to crush sunflowerseed was also established in 1943, at Altona, Manitoba. This plant is now part of C.S.P. Foods and has the capacity to crush 600 tonnes per day of either canola or sunflowerseed.

From these beginnings, the number of crushing plants in Canada has expanded to 11 in 1984, owned by 9 separate companies. These are detailed in table I. The locations of the crushing plants on the Prairies are shown on the map on page 14.

At one time Canadian plants also imported a large amount of other oilseeds, such as peanuts, palm kernels, copra, etc. With the large increase in domestic production of soybeans and canola, however, this is no longer a significant part of their crushing operations. U.S. soybeans are now the only significant oilseed import.

With the exception of canola, the domestic market (i.e. domestic crushing plants) for oilseeds is very concentrated. For sunflower seed only one domestic processor exists. Flaxseed is processed by two crushers, of which one plant accounts for the majority of domestically produced linseed oil. A market anomaly exists in the case of flaxseed, since most is produced in Manitoba and Saskatchewan while crushers in these provinces process none of it. Soybeans are processed by three Ontario plants, each of which accounts for about one third of the total amount crushed.

Canola was processed by ten(1) separate crushing plants in 1982/83. The three largest plants accounted for 51% of the total amount crushed. Ten years earlier, in 1972/73, 5 plants processed canola-rapeseed, and the three largest crushers processed 86% of the total. In 1962/63, rapeseed was processed by only four plants, the three largest accounting for 90% of the total crush. Clearly, as

(1) The C.S.P. Foods plant in Saskatoon ceased crushing operations in March 1983, following the start-up of the new plant at Harrowby, Manitoba.

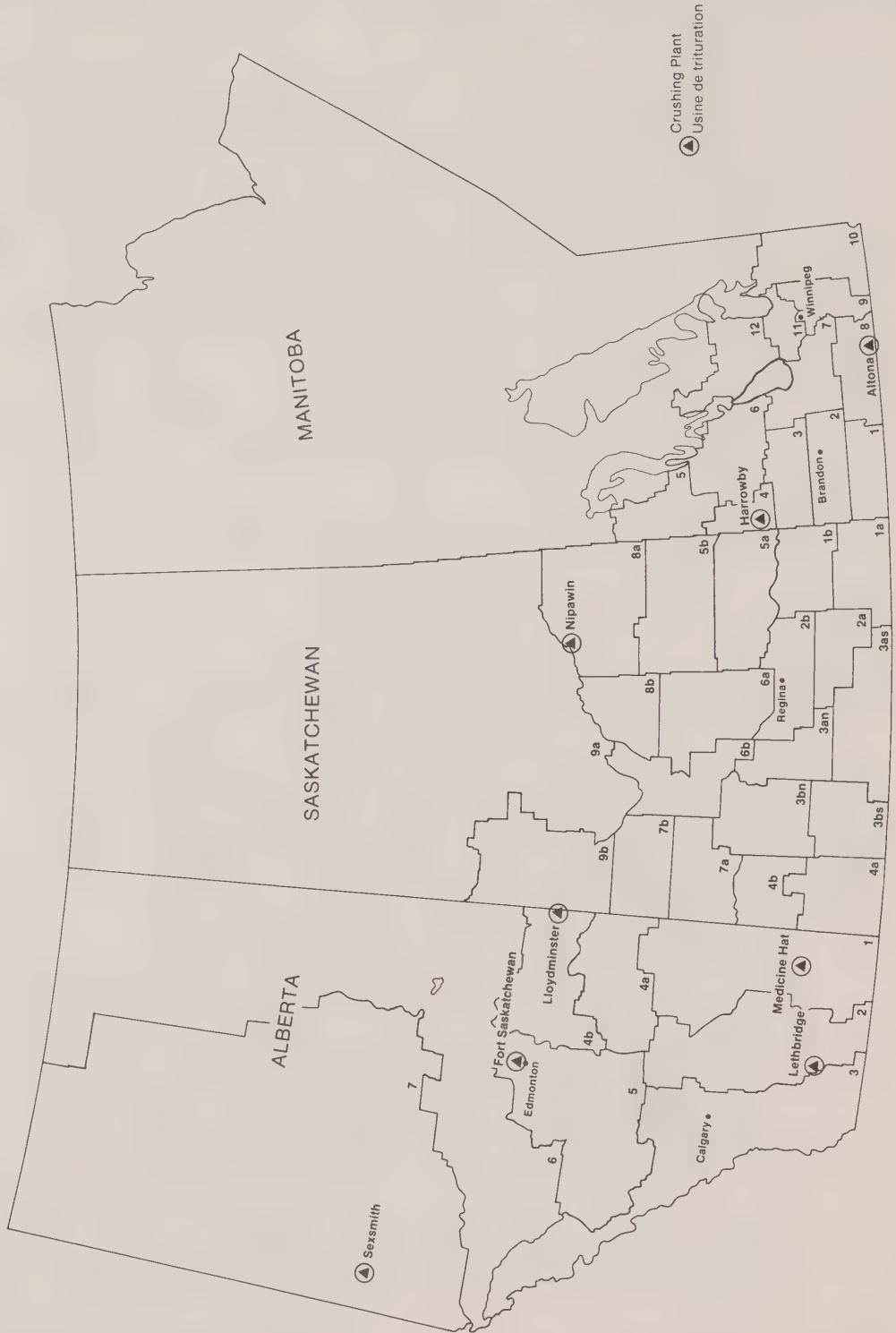
TABLE I

OILSEED CRUSHERS, 1984

Company	Location	Oilseeds Crushed (1982/83)	Approximate Daily Capacity (tonnes)
C.S.P. Foods Ltd.	1) Nipawin, Sask. 2) Altona, Man. 3) Harrowby, Man.	Canola Canola, Sunflower seed Canola	450 600 600
Alberta Linseed Oil Co. Ltd.	Medicine Hat, Alta.	Flaxseed	N/A
Canbra Foods Ltd.	Lethbridge, Alta.	Canola	900
United Oilseeds Products Ltd.	Lloydminster, Alta.	Canola	600
N.A.R.P. Processors Ltd.	Sexsmith, Alta.	Canola	600
Alberta Food Products Ltd.	Fort Saskatchewan, Alta.	Canola	600
Maple Leaf Monarch Ltd.	Windsor, Ont.	Soybeans, Canola, Flaxseed	1 300 soybeans 280 soft seed(1)
Canadian Vegetable Oil Processing	Hamilton, Ont.	Soybeans, Canola	1 200 soybeans 600 soft seed(1)
Victory Soya Mills	Toronto, Ont.	Soybeans	1 350

(1) canola, sunflowerseed or flaxseed.

Location of Oilseed Crushing Plants in the Prairie Provinces
Emplacement des usines de trituration des oléagineux dans les provinces des Prairies



canola has become an established crop with an established market for its products, the competition in the processing industry has increased.

d) Sources of Oilseeds Crushed

Canola crushed by Canadian crushers is virtually all domestically produced, except for a few thousand tonnes supplied by American farmers in border areas. (Until February 1984, canola oil did not have "GRAS" status (Generally Regarded as Safe), and thus there has been virtually no U.S. production of canola/rapeseed). The three plants located in Manitoba and Saskatchewan process mainly Manitoba and Saskatchewan grown canola. The four other Prairie canola crushers, all located in Alberta, process all domestically crushed Alberta and B.C. production, along with a large proportion of Saskatchewan production. The Ontario crushers obtain the majority of their supply from Western Canada, since Ontario production is largely in an early experimental stage.

Soybeans crushed in the three Ontario plants consist in large part of Ontario production. Imports, however, are still a significant factor, accounting for 40% of the total amount crushed in 1982/83. This has decreased from 49% in 1972/73.

The sunflowerseed crushing facility at Altona, Manitoba accounts for virtually all of the domestic processing of sunflowerseed (except confectionery seed), in Canada. As mentioned earlier, the majority of Canada's sunflowerseed originates in southern Manitoba, with a small area in Saskatchewan.

Most of the flaxseed produced in Canada originates in Manitoba and Saskatchewan, and is shipped to Ontario for domestic processing. The plant in Medicine Hat, Alberta has the capacity to handle only a portion of Alberta production.

e) Crush Margins and the Crush Cycle

As is illustrated on chart 6, the monthly crush of soybeans and canola follows an annual cycle. It is more pronounced for canola, and in both cases is subject to significant monthly variations. In general, however, the amount crushed reaches a low in August and peaks in September or October as new crop supplies become available. The less erratic cycle for soybeans is partly due to the availability of imported beans, which supplement the available supply of domestic beans. It is also due to the more stable crush margins for soybeans, as illustrated on chart 7.

The crush margin is the difference between the cost to the crushing plants of the raw oilseed and the price received for the oil and meal that are produced. It does not take into account plant operating

Chart — 6

Graphique — 6

Monthly Crush of Canola/Rapeseed and Soybeans
Stocks triturés mensuels de canola/colza et de soya

(Total volume crushed — Volume total trituré)

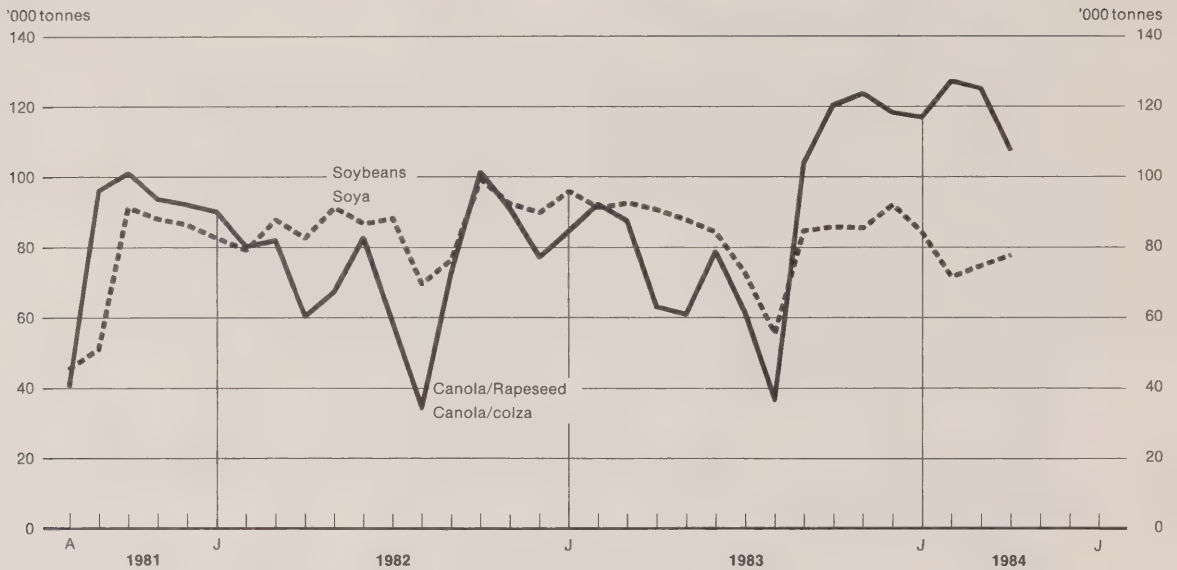
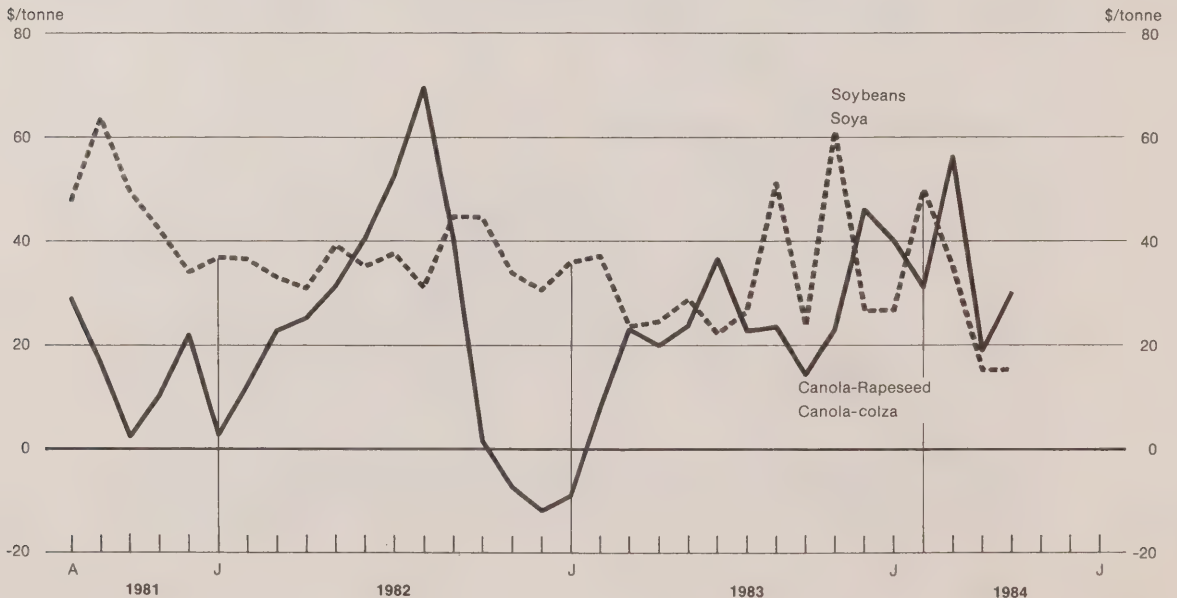


Chart — 7

Graphique — 7

Crush Margins for Canola-Rapeseed and Soybeans
Marges des stocks de canola/colza et de soya broyés



costs and thus is not indicative of profit. Crush margins for soybeans have remained fairly consistently in the \$30-40/tonne range over the past three years. Canola margins have fluctuated widely, from a high of \$69.66/tonne in August 1982 to a low of -\$11.88/tonne in December, 1982. The factor largely responsible for the difference between the two commodities is the higher oil content of canola. Canola oil prices are determined to a great extent by the price of U.S. soybean oil. A change in the soyoil price has a greater impact on canola crushers than on soybean crushers, who derive a greater portion of their total revenue from the sale of protein meal. In general, the crushing of canola is favoured when oil prices are high, and high meal prices favour the crushing of soybeans.

When crush margins are favourable crushers will generally process as much as plant capacity and available supplies will permit. The plants do not shut down, however, if margins are unfavourable, at least not in the short term. This can be evidenced by the amount of canola crushed between October 1982 and February 1983, when margins were negative. Several factors contribute to this continuance of crushing, one of which is the forward contracting of purchases which creates a lag effect between the crush margin and its effect on amount crushed. To completely shut down and start up a plant would also result in considerable costs, often greater than the losses due to negative crush margins in the short term.

5. Product Markets

a) Domestic Markets

At present the major edible oils consumed in Canada are canola and soybean oil, along with smaller quantities of palm, coconut, corn, sunflower, peanut and cottonseed oils. None of the latter oils account for more than 5% of the total. In 1982/83, as illustrated by chart 8, canola and soybean oil accounted for 56% and 35% of domestic consumption respectively. This has changed significantly since 1972. The increase in canola oil utilization has been at the expense of imported oils such as coconut and palm oils, which in 1972 together accounted for over 18% of total consumption. Soybean oil has maintained its market share throughout this time period. Sunflower oil has also maintained its share of domestic consumption although it remains at less than 5%.

Chart — 8

Graphique — 8

Relative Share of Major Oils in the Domestic Market

Part relative des principales huiles sur le marché intérieur

(Percent of Domestic Consumption — Pourcentage de la consommation intérieure)

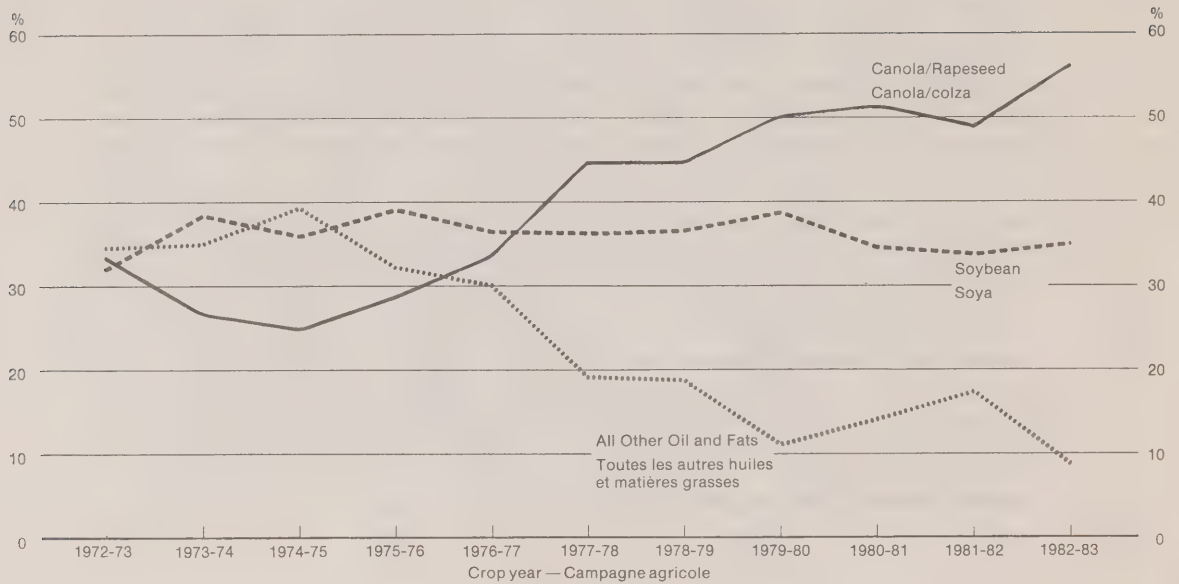
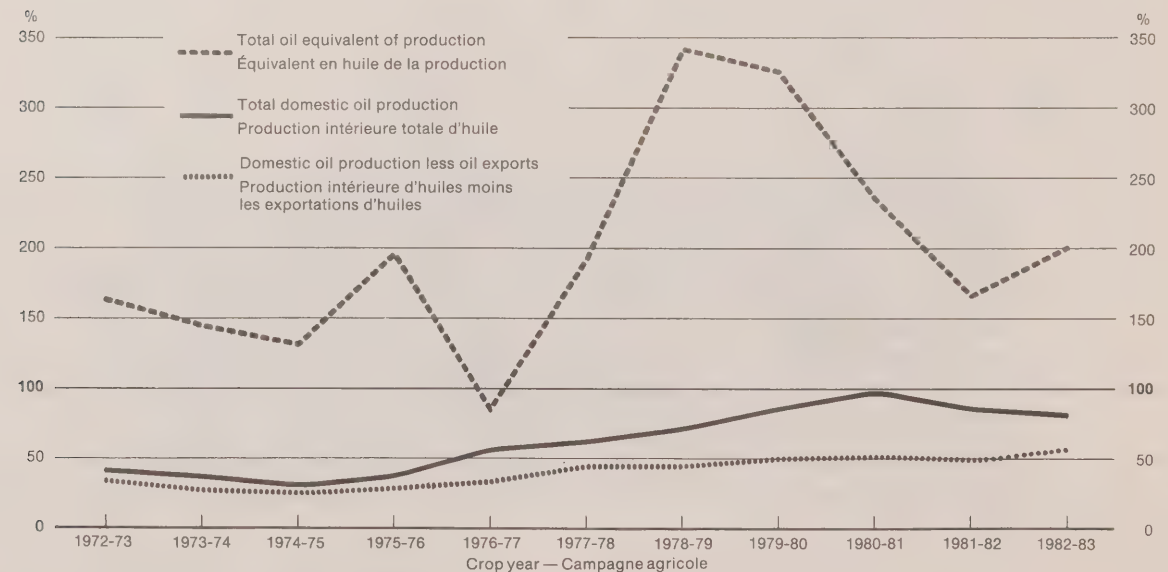


Chart — 9

Graphique — 9

Domestic Production of Canola Oil as a Percent of Domestic Consumption of Oils and Fats⁽¹⁾

Production intérieure d'huile de canola en pourcentage de la consommation intérieure d'huiles et de matières grasses⁽¹⁾



(1) Excluding butter and lard. — Sauf le beurre et le lard.

In gross volume terms, Canada has the capability to be self-sufficient in edible oils. In fact, as evidenced by chart 9, canola alone could supply domestic requirements. While in 1982/83 canola oil supplied over half of the total oil consumed in Canada (chart 8), this could be much higher, even without expanding present crushing capacity. As illustrated by the middle line on chart 9, 1982/83 domestic production of canola oil was equivalent to more than 80% of domestic requirements. However, 111 400 tonnes or 30% of this oil was exported and replaced by imports of other oils or oilseeds. The top line on the chart shows the oil equivalent of total canola production as a percent of domestic requirements. In the past ten years, only 1976/77 production was below requirements.

It is unlikely, however, that canola alone, or even canola plus soybeans, would ever supply Canada's entire oil needs. Other oils have their own special demand characteristics. For example, sunflower and corn oils, with their high levels of polyunsaturated fats, are viewed as being nutritionally superior. The technical characteristics of oils also differ; for example soybean and canola oils must be blended with other oils (generally coconut or palm oils) for best results in margarine manufacturing.

In the case of protein meals, Canada also has opportunity to increase self-sufficiency. At present soybean meal accounts for most of the protein meal consumed in Canada, 393 000 tonnes of which were imported in 1982/83. This is in addition to the 335 000 tonnes of meal produced from the 419 000 tonnes of soybeans which were imported. Nineteen thousand tonnes of soymeal were exported, giving Canada a net deficit of about 709 000 tonnes of soybean meal in 1982/83.

Some of this deficit could be met by increased usage of domestically produced canola meal, since in 1982/83 119 700 tonnes or 23% of the canola meal produced in Canada was exported. To replace the imports of soybean meal, however, would require about 843 000 tonnes of canola meal, on a protein equivalent basis. (Canola meal has a protein content of about 37%, compared to 44% for soybean meal). Even if total Canadian production had been crushed domestically in 1982/83, only an additional 734 000 tonnes of meal would have been available. Thus a deficit of over 100 000 tonnes would remain. This implies that Canada will remain a net importer of protein meals for the foreseeable future.

b) Export Markets

The exports of oil and meal to various areas of the world are shown on chart 10. The major export markets for canola oil in 1982/83 were India, Algeria, Hong Kong and Australia. (It should be noted that food aid shipments are included in these totals.) Norway, the United States and South Korea are the major markets for canola meal.

Exports of canola oil and meal as a percent of total exports of canola and canola products are presented on chart 11. From 3.5% in 1972/73, this increased to a high of 22.7% in 1980/81, with a 1982/83 level of 15.4%. In general, the trend has been toward a greater proportion of exports of canola products.

From an economic point of view it is desirable to process a commodity domestically and export the finished or semi-finished products, since increased value added is generated by the processing industry. While improvements have been made since 1972, there is room for further expansion in this area.

The major obstruction to the increase in product exports is importer preference. Domestic processing capacity will expand to meet an increased demand, but one cannot easily compel a country to buy oil rather than the oilseed. In the case of canola exports, Japan is the major consideration. In 1982/83 it imported 1 129.2 thousand tonnes of Canadian canola, with an oil equivalent of 457 000 tonnes, and only 4 700 tonnes of canola oil and 2 800 tonnes of canola meal. Since Japan is the major export market for canola products, there is not much chance of greatly increasing exports of canola products as long as Japan prefers to process imported canola seed rather than import the products. It is possible, however, that with the improved quality of canola oil and meal over traditional rapeseed products, and the recent acceptance of canola oil in the U.S.A., canola oil and meal may slowly displace other oils and meals in world consumption and open new markets for Canadian products.

Chart — 10

Exports of Oil and Meal by Region of Destination, 1982-83

Graphique — 10

Exportations d'huile et de tourteaux par région de destination, 1982-83

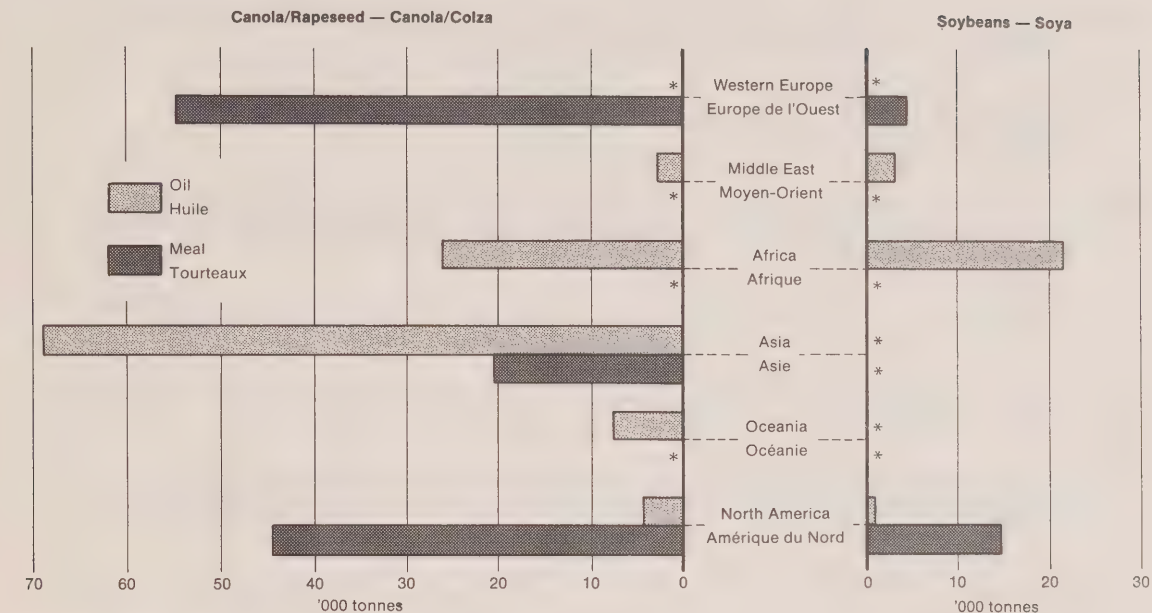
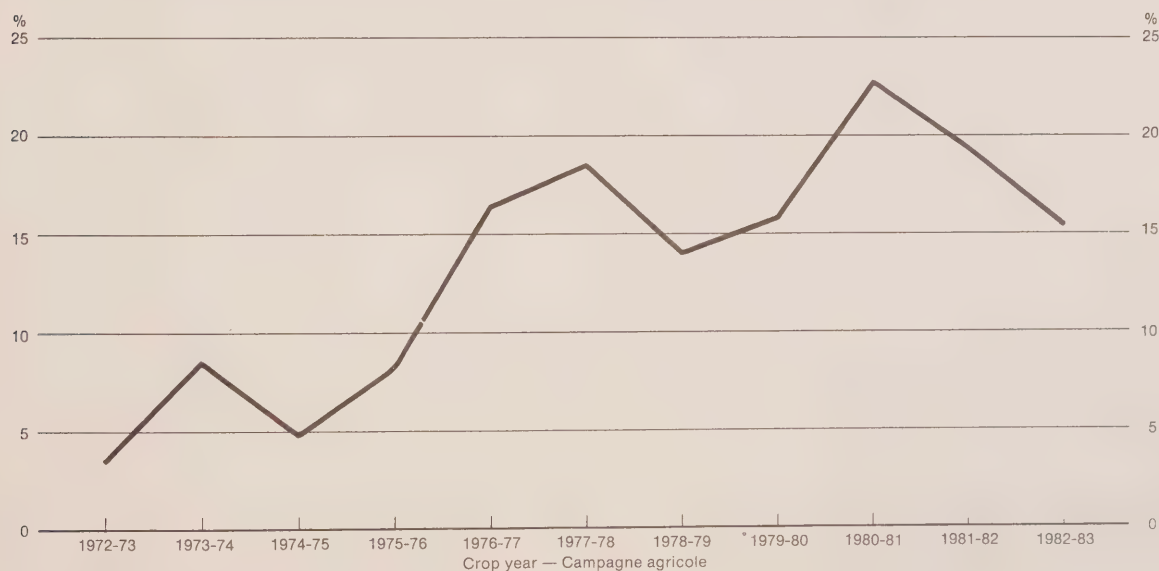


Chart — 11

Exports of Canola Oil and Meal as a Percent of Total Exports of Canola and Canola Products

Graphique — 11

Exportations d'huile et de tourteaux de canola en pourcentage des exportations totales de canola et de sous-produits du canola



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Note: This edition of "An Overview of the Canadian Oilseed Industry" contains modifications to eliminate two unedited paragraphs from the initial report, which may have been somewhat misleading. The two paragraphs appeared on page 8 (The ready access the grain) and page 15 (While the the legislation).

